AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1.   (Previously Presented) A detection system comprising:

(a)   a detection cell having an entry gate; and

(b)   a drive unit for controlling switching of said gate,

wherein said drive unit is arranged to control switching of said gate in both a pseudo-random binary sequence and in a bit-flipped pseudo-random binary sequence,

wherein the system is arranged to produce analyzing matrices corresponding to said pseudo-random binary sequence and to said bit-flipped sequence, and data sets corresponding to outputs obtained from the system for said pseudo-random binary sequence and for said bit-flipped pseudo-random binary sequence, and

wherein said matrices and data sets are combined by matrix algebra to produce a system output with reduced noise.

2.-4.   (Cancelled).

5.   (Currently Amended) An ~~IMS~~ ion mobility spectrometer detection system according to claim 1, wherein the cell has a drift region, and wherein the gate is arranged to control entry to the drift region.

6.   (Currently Amended) A method of controlling switching of an admittance gate in a detection system comprising:

(a)   switching said gate both in a pseudo-random binary sequence and in a bit-flipped pseudo-random binary sequence;

(b)   producing analyzing matrices corresponding to said pseudo-random binary sequence and to said bit-flipped sequence;

(c)   producing data sets corresponding to outputs obtained from said system for said pseudo-random binary sequence and for said bit-flipped pseudo-random binary sequence; and

(d)   using matrix algebra to combine said matrices and data sets to produce a system output with reduced noise.

7.-9. (Cancelled).